

**CLAIMS:** *The following is a listing of all claims entered in the national stage with their status and the text of all active claims.*

- 1) (CURRENTLY AMENDED) Simple product consisting in two or more samples containing at least one kind of excited isomer nuclides in which at least one said excited isomer nuclide has at least one metastable state that deexcites by emitting gamma rays, called hereafter deexcitation gamma rays, characterized in that groups of two or several excited nuclei of the aforesaid excited isomer nuclides of the aforesaid samples, are entangled ~~between them~~ together and are distributed in whole or in part of the aforesaid samples, called thereafter by convention "entangled" samples, the aforementioned "entangled" samples being able to be separated in space and presenting quantum couplings between some of the excited nuclei of the aforesaid excited isomer nuclides contained in these separate samples.
- 2) (CURRENTLY AMENDED) Simple product according to claim 1 characterized in that ~~it includes said~~ "entangled" samples ~~containing comprises~~ said excited nuclei of at least one kind of said excited isomer nuclides having at least one said metastable state with a duration of its half-life ~~of a duration~~ from one microsecond to 50 years, for example Niobium (93Nb41m), Cadmium (111Cd48m), Cadmium (113Cd48m), Cesium (135Ce55m), Indium (115In49m), Tin (117Sn50m), Tin (119Sn50m), Tellurium (125Te52m), Xenon (129Xe54m), Xenon (131Xe54m), Hafnium (178Hf72m), Hafnium (179Hf72m), Iridium (193Ir77m), or Platinum (195Pt78m), the aforementioned "entangled" samples being able to be moved over large distances and to wait long periods, if their half-life allows it, while being always likely to be deexcited.
- 3) (CURRENTLY AMENDED) Simple product according to claim 1 characterized in that ~~it includes said~~ "entangled" samples, are in any physical form or chemical form, for example the form of solids in sheet or powder, or the form of fluids or gases (for example case of Xenon), which contain a proportion of at least one or several ~~isotopes~~ aforesaid isomer nuclides, for example Niobium (93Nb41m), Cadmium (111Cd48m), Cadmium (113Cd48m), Cesium (135Ce55m), Indium (115In49m), Tin (117Sn50m), Tin

(119Sn50m), Tellurium (125Te52m), Xenon (129Xe54m), Xenon (131Xe54m), Hafnium (178Hf72m), Hafnium (179Hf72m), Iridium (193Ir77m), Platinum (195Pt78m), or in the form of alloys, mixtures, or in the form of chemical compounds incorporating a proportion of one or several of the aforesaid ~~isotopes~~ excited isomer nuclides.

4) (CURRENTLY AMENDED) Simple product according to claim 1 characterized in that it includes said "entangled" samples, of which one at least is in a physical form and/\_/ or a chemical form different from the form of one or several the other said "entangled" samples, for example one in the form of powder and the other in the form of a sheet, or one in the form of a solid, or in the form of powder or gas and the other incorporated in injectable carrying molecules for example, in salts or molecules put in solution.

5) (CURRENTLY AMENDED) Manufacturing process of the simple product according to the claim 1 in which one uses amongst other things:

- (a) at least a kind of isomer nuclides,
- (b) irradiation by gamma rays,

characterized in that the following steps are carried out:

- (a) one prepares together samples containing nuclei of at least an one kind of isomer nuclides having at least one metastable state,
- (b) one proceeds to the by-irradiation by means of gamma rays, at least partly entangled, of a sufficient energy to excite certain of the aforesaid nuclei of the aforesaid isomer nuclide in-to at least aone metastable state, the said entangled gamma rays forming groups which are being for example generated, for example, either by a source of gamma rays emitted in a cascade, or by a generator of gamma rays coming from the Bremsstrahlung of accelerated particles, the said groups of said gamma rays, when they are entangled, exciting the corresponding said nuclei of the said isomer nuclides distributed in the said samples irradiated together and, qualified in the continuation by convention as forming the "entangled" samples of the aforesaid simple product.

6) (CURRENTLY AMENDED) Method according to claim 5 characterized in that one uses aforementioned "entangled" samples of which one at least has undergone a physical and / or a chemical transformation after the aforementioned irradiation.

7) (CURRENTLY AMENDED) Use of the simple product defined according to anyone of claims 1, ~~2, 3 or 4 to control a remote deexcitation by employing isomer nuclides,~~ in which one uses amongst other things:

- (a) at least one kind of isomer nuclides,
- (b) the stimulation of the deexcitation by X-ray or gamma irradiation of at least one kind of isomer nuclides,
- (c) either the detection of gamma radiation measuring at least one line characteristic of ~~the~~ one kind of isomer nuclides, or the gamma radiation as such, or a combination of these exploitations,

characterized in that the following steps are carried out in order to control a remote deexcitation by employing aforementioned "entangled" samples:

- (a) one separates in space whole or part of the said "entangled" samples of the aforesaid simple product containing aforementioned excited nuclei of the aforesaid excited isomer nuclide presenting some quantum couplings, certain of the aforesaid excited nuclei of the aforesaid excited isomer nuclide being distributed on some of these said "entangled" samples, ~~and presenting quantum couplings~~,
- (b) one exploits said quantum couplings between said excited nuclei of certain of the said "entangled" samples of the aforesaid simple product, independently of the distances, mediums separating them and independently from the mediums in which these said "entangled" samples are placed:
  - (i) by causing at least a modulated stimulation of the deexcitation by X-ray or gamma irradiation, for example obtained by means of a source of Iron 55, within at least one of the aforesaid "entangled" samples, qualified as "entangled" "master" sample, the aforementioned said modulated

stimulation inducing, by means of the aforesaid quantum couplings, a remote deexcitation of ~~the one or more of the other~~ aforesaid "entangled" samples, qualified as "entangled" "slaves" samples; the aforesaid modulated stimulation applied to the said "master" sample characterizing at least one information or at least one control to be transmitted,

(ii) and, either by determining, either at least one detection of information, or at least one detection of remote control, by means of at least one measurement made with a detector of gamma radiation, of at least ~~one~~ an additional modulated deexcitation on at least one line characteristic of at least one aforesaid isomer nuclide contained in at least one of the other aforesaid "entangled" "slave" samples, or by using the gamma radiation resulting from the additional modulated deexcitation from at least one aforesaid isomer nuclide contained in at least one of the other aforesaid "entangled" "slave" samples, as a remote-local control, or by using at least one of the other aforesaid "entangled" "slave" samples, as a product of which the irradiation is operated by remote control from the aforesaid "entangled" "master" sample to remotely irradiate the environment of the aforesaid "entangled" "slave" sample, or a combination of these exploitations.

8) (CURRENTLY AMENDED) Use according to claim 7 characterized in that one employs aforementioned "entangled" samples containing aforementioned excited nuclei of at least two aforementioned isomer nuclides, whose gamma response of at least one said "entangled" "slave" sample either is measured, or is used to irradiate its environment.

9) (CURRENTLY AMENDED) Use according to claim 7 characterized in that one employs aforementioned "entangled" samples containing aforementioned excited nuclei of at least one aforementioned isomer nuclide, of which the gamma response is made up of a plurality of lines from which at least two lines are measured simultaneously, for example to improve the signal to noise ratio during the measurement carried on the aforementioned "entangled" "slave" sample or on the aforementioned "entangled"

“slave” samples.

10) (CURRENTLY AMENDED) Use according to claim 7 characterized in that ~~one employs at the aforementioned~~ modulated stimulation is specified in amplitude on at least one mentioned “entangled” “master” sample.

11) (CURRENTLY AMENDED) Use according to claim 7 characterized in that the aforementioned ~~one employs a modulated~~ stimulation is specified modulated in time on at least one mentioned “entangled” “master” sample.

12) (CURRENTLY AMENDED) Complex product comprising a plurality of simple products according to claim 1 of simple product characterized in that a plurality of groups sets of mentioned “entangled” samples, each group set of said “entangled” samples constituting a product according to claim 1, are laid out in relation to each other on at least two supports, for example disks, called thereafter by convention “entangled” supports, for example by positioning an “entangled” sample of each group set of “entangled” samples on each one of the aforesaid supports according to a defined order.

13) (CURRENTLY AMENDED) Device of implementation of the method according to claim 5 for the manufacture of the complex product according to claim 12 characterized in that it includes at least an apparatus of excitation proceeding to the aforementioned irradiation irradiating at a time together at least one group set of mentioned samples together, the group set of samples to be entangled, containing nuclei of at least one isomer nuclide having at least one metastable state, by means of gamma rays at least partly entangled, for example generated, either by a source of gamma rays emitted in a cascade, or by a generator of gamma rays coming from the Bremsstrahlung of accelerated particles, with a sufficient energy to excite the aforementioned nuclei of the isomer nuclide in at least one metastable state, at least two of the mentioned “entangled” samples, of at least one group set of “entangled” samples, being distributed on two or several more supports, the “entangled” supports, according to the optimization of the apparatus of excitation.

14) (CURRENTLY AMENDED) Device of implementation of the method of use

according to claim of use 7 applied to the complex product according to claim 12 characterized in that it includes at least one of the following apparatuses, insofar as it is intended to implement whole or part of the method of use, object of the aforesaid claim of use, located within the place covered by this patent, including aircrafts, marine vessels, submarines and spacecrafts, and the terrestrial, marine and space probes:

- (a) one or several apparatuses for the aforementioned modulated stimulation, the "quantum transmitters", applied to at least one of the the aforementioned "entangled" samples, the "entangled" "master" sample, of at least one the the aforementioned set of "entangled" samples pertaining to at least one of the the aforementioned "entangled" supports, deexciting by X or gamma stimulation, one or several of the said "entangled" "masters" samples,
- (b) one or several apparatuses of detection, the "quantum receivers", for measuring simultaneously with the action of at least one of the aforesaid apparatuses for modulated stimulation, a gamma radiation coming from an additional modulated deexcitation on at least one characteristic line of at least one the aforementioned isomer nuclide contained in at least one of the other the aforementioned "entangled" samples, the "entangled" "slave" sample, of at least one the the aforementioned set of "entangled" samples pertaining to at least one of the of at least one of the other the aforementioned "entangled" supports, and in that this additional measured modulated deexcitation, is used to determine the reception of at least one information or to activate at least a command upon the at least one remote control coming from the apparatus of stimulation.

15) (CURRENTLY AMENDED) Device of implementation according to claim 13 ~~for the manufacture of the complex product according to claim 12~~ characterized in that the the aforementioned "entangled" samples of one or more groups the aforementioned sets of "entangled" samples are laid out on at least two the aforementioned supports in the the aforementioned apparatus of irradiation excitation, at least two of these said supports, the "entangled" supports, being thereafter separated for the utilization.

16) (CURRENTLY AMENDED) Device of implementation according to claim 13 ~~for the manufacture of the complex product according to claim 12~~ characterized in that one has uses only one mentioned support for the groups mentioned sets of samples to be entangled together, before their divisions, in the mentioned apparatus of irradiation excitation, the said samples of each group set, once "entangled", being the subject of a division on at least two supports, the mentioned "entangled" supports.

17) (CURRENTLY AMENDED) Device of implementation according to claim 14 ~~to exploit the complex product according to claim 12~~ characterized in that at least two of the aforementioned "entangled" supports are positioned in relation to each other, for example in synchronous relation, in the mentioned apparatus or apparatuses of modulated stimulation, and in the mentioned apparatus or ~~the~~ apparatuses of detection, in such way that on at least one foresaid "entangled" support, at least one mentioned "entangled" slave sample is measured by at least one said apparatus of detection, when at least one mentioned "entangled" "master" sample of the same group mentioned set of "entangled" samples located on one of the other mentioned "entangled" supports is stimulated in at least one said apparatus of modulated stimulation.

18) (CURRENTLY AMENDED) Device of implementation according to claim 14 characterized in that mentioned sets groups of "entangled" samples are arranged according to a defined order allowing the transmission and the reception of complex messages.

19) (PREVIOUSLY PRESENTED) Utilization according to claim 7 to remotely transmit information, in particular emergency signals, remote controls, data acquisition, in the mines, sea-beds in particular by means of robots and submarines, in drillings, in the space field in particular at very long distances.

20) (CURRENTLY AMENDED) Product according to ~~any one of claims 1, 2, 3 or 4~~ for medical use in order to irradiate an organ in which at least an mentioned "entangled" sample is laid out near or in the foresaid organ, by causing a remote stimulation by means of at least one other mentioned "entangled" sample.

21) (*PREVIOUSLY PRESENTED*) Device of implementation of the method of use according to claim 7 for usage as a commercial kit of demonstration of whole or part of the method of use covered by the aforesaid claim.

*Clean text of the national stage entered claims is provided for convenience hereafter:*

- 1) (CURRENTLY AMENDED) Simple product consisting in two or more samples containing at least one kind of excited isomer nuclides in which at least one said excited isomer nuclide has at least one metastable state that deexcites by emitting gamma rays, called hereafter deexcitation gamma rays, characterized in that groups of two or several excited nuclei of the aforesaid excited isomer nuclides of the aforesaid samples, are entangled together and are distributed in whole or in part of the aforesaid samples, called thereafter by convention "entangled" samples, the aforementioned "entangled" samples being able to be separated in space and presenting quantum couplings between some of the excited nuclei of the aforesaid excited isomer nuclides contained in these separate samples.
- 2) (CURRENTLY AMENDED) Simple product according to claim 1 characterized in that said "entangled" samples comprises said excited nuclei of at least one kind of said excited isomer nuclides having at least one said metastable state with a duration of its half-life from one microsecond to 50 years, for example Niobium (93Nb41m), Cadmium (111Cd48m), Cadmium (113Cd48m), Cesium (135Ce55m), Indium (115In49m), Tin (117Sn50m), Tin (119Sn50m), Tellurium (125Te52m), Xenon (129Xe54m), Xenon (131Xe54m), Hafnium (178Hf72m), Hafnium (179Hf72m), Iridium (193Ir77m), or Platinum (195Pt78m), the aforementioned "entangled" samples being able to be moved over large distances and to wait long periods, if their half-life allows it, while being always likely to be deexcited.
- 3) (CURRENTLY AMENDED) Simple product according to claim 1 characterized in that said "entangled" samples are in any physical form or chemical form, for example the form of solids in sheet or powder, or the form of fluids or gases (for example case of Xenon), which contain a proportion of at least one or several aforesaid isomer nuclides, for example Niobium (93Nb41m), Cadmium (111Cd48m), Cadmium (113Cd48m), Cesium (135Ce55m), Indium (115In49m), Tin (117Sn50m), Tin (119Sn50m), Tellurium (125Te52m), Xenon (129Xe54m), Xenon (131Xe54m), Hafnium (178Hf72m), Hafnium (179Hf72m), Iridium (193Ir77m), Platinum (195Pt78m), or in the form of alloys, mixtures,

or in the form of chemical compounds incorporating a proportion of one or several of the aforesaid excited isomer nuclides.

4) (CURRENTLY AMENDED) Simple product according to claim 1 characterized in that it includes said "entangled" samples, of which one at least is in a physical form and / or a chemical form different from the form of one or several other said "entangled" samples, for example one in the form of powder and the other in the form of a sheet, or one in the form of a solid, or in the form of powder or gas and the other incorporated in injectable carrying molecules for example, in salts or molecules put in solution.

5) (CURRENTLY AMENDED) Manufacturing process of the simple product according to the claim 1 in which one uses amongst other things:

- (a) at least a kind of isomer nuclides,
- (b) irradiation by gamma rays,

characterized in that the following steps are carried out:

- (a) one prepares together samples containing nuclei of at least one kind of isomer nuclides having at least one metastable state,
- (b) one proceeds to the irradiation by means of gamma rays, at least partly entangled, of a sufficient energy to excite certain of the aforesaid nuclei of the aforesaid isomer nuclide to at least one metastable state, the said entangled gamma rays forming groups which are generated, for example, either by a source of gamma rays emitted in a cascade, or by a generator of gamma rays coming from the Bremsstrahlung of accelerated particles, the groups of said gamma rays, when they are entangled, exciting the corresponding said nuclei of the said isomer nuclides distributed in the said samples irradiated together and forming the "entangled" samples of the aforesaid simple product.

6) (CURRENTLY AMENDED) Method according to claim 5 characterized in that one uses aforementioned "entangled" samples of which one at least has undergone a physical and / or a chemical transformation after the aforementioned irradiation.

7) (CURRENTLY AMENDED) Use of the simple product defined according to claim 1 in

which one uses amongst other things:

- (a) at least one kind of isomer nuclides,
- (b) the stimulation of the deexcitation by X-ray or gamma irradiation of at least one kind of isomer nuclides,
- (c) either the detection of gamma radiation measuring at least one line characteristic of one kind of isomer nuclides, or the gamma radiation as such, or a combination of these exploitations,

characterized in that the following steps are carried out in order to control a remote deexcitation by employing aforementioned "entangled" samples:

- (a) one separates in space whole or part of the said "entangled" samples of the aforesaid simple product containing aforementioned excited nuclei of the aforesaid excited isomer nuclide presenting some quantum couplings, certain of the aforesaid excited nuclei of the aforesaid excited isomer nuclide being distributed on some of these said "entangled" samples,
- (b) one exploits said quantum couplings between said excited nuclei of certain of the said "entangled" samples of the aforesaid simple product, independently of the distances, mediums separating them and independently from the mediums in which these said "entangled" samples are placed:
  - (i) by causing at least a modulated stimulation of the deexcitation by X-ray or gamma irradiation, for example obtained by means of a source of Iron 55, within at least one of the aforesaid "entangled" samples, qualified as "entangled" "master" sample, the said modulated stimulation inducing, by means of the aforesaid quantum couplings, a remote deexcitation of one or more of the other aforesaid "entangled" samples, qualified as "entangled" "slaves" samples; the aforesaid modulated stimulation applied to the said "master" sample characterizing at least one information or at least one control to be transmitted,
  - (ii) and, either by determining, either at least one detection of information, or at

least one detection of remote control, by means of at least one measurement made with a detector of gamma radiation, of at least an additional modulated deexcitation on at least one line characteristic of at least one aforesaid isomer nuclide contained in at least one of the other aforesaid "entangled" "slave" samples, or by using the gamma radiation resulting from the additional modulated deexcitation from at least one aforesaid isomer nuclide contained in at least one of the other aforesaid "entangled" "slave" samples, as a local control, or by using at least one of the other aforesaid "entangled" "slave" samples, as a product of which the irradiation is operated by remote control from the aforesaid "entangled" "master" sample to irradiate the environment of the said "entangled" "slave" sample, or a combination of these exploitations.

- 8) (CURRENTLY AMENDED) Use according to claim 7 characterized in that one employs aforementioned "entangled" samples containing aforementioned excited nuclei of at least two aforementioned isomer nuclides, whose gamma response of at least one said "entangled" "slave" sample either is measured, or is used to irradiate its environment.
- 9) (CURRENTLY AMENDED) Use according to claim 7 characterized in that one employs aforementioned "entangled" samples containing aforementioned excited nuclei of at least one aforementioned isomer nuclide, of which the gamma response is made up of a plurality of lines from which at least two lines are measured simultaneously, for example to improve the signal to noise ratio during the measurement carried on the aforementioned "entangled" "slave" sample or on the aforementioned "entangled" "slave" samples.
- 10) (CURRENTLY AMENDED) Use according to claim 7 characterized in that the aforementioned modulated stimulation is specified in amplitude on at least one aforementioned "entangled" "master" sample.
- 11) (CURRENTLY AMENDED) Use according to claim 7 characterized in that the aforementioned modulated stimulation is specified in time on at least one

aforementioned “entangled” “master” sample.

12) (CURRENTLY AMENDED) Complex product comprising a plurality of simple products according to claim 1 of simple product characterized in that a plurality of sets of aforementioned “entangled” samples, each set of said “entangled” samples constituting a product according to claim 1, are laid out in relation to each other on at least two supports, for example disks, called thereafter by convention “entangled” supports, for example by positioning an “entangled” sample of each set of “entangled” samples on each one of the aforesaid supports according to a defined order.

13) (CURRENTLY AMENDED) Device of implementation of the method according to claim 5 for the manufacture of the complex product according to claim 12 characterized in that it includes at least an apparatus of excitation proceeding to the aforementioned irradiation irradiating at a time at least one set of aforementioned samples together, the set of samples to be entangled, containing nuclei of at least one isomer nuclide having at least one metastable state, by means of gamma rays at least partly entangled, for example generated, either by a source of gamma rays emitted in a cascade, or by a generator of gamma rays coming from the Bremsstrahlung of accelerated particles, with a sufficient energy to excite the aforementioned nuclei of the isomer nuclide in at least one metastable state, at least two of the aforementioned “entangled” samples, of at least one set of “entangled” samples, being distributed on two or more supports, the “entangled” supports, according to the optimization of the apparatus of excitation.

14) (CURRENTLY AMENDED) Device of implementation of the method of use according to claim of use 7 applied to the complex product according to claim 12 characterized in that it includes at least one of the following apparatuses, insofar as it is intended to implement whole or part of the method of use, object of the aforesaid claim of use, located within the place covered by this patent, including aircrafts, marine vessels, submarines and spacecrafts, and the terrestrial, marine and space probes:

(a) one or several apparatuses for the aforementioned modulated stimulation, the “quantum transmitters”, applied to at least one of the aforementioned “entangled” samples, the “entangled” “master” sample, of at least one the

aforementioned set of "entangled" samples pertaining to at least one of the aforementioned "entangled" supports, deexciting by X or gamma stimulation, one or several of the said "entangled" "masters" samples,

(b) one or several apparatuses of detection, the "quantum receivers", for measuring simultaneously with the action of at least one of the aforesaid apparatuses for modulated stimulation, a gamma radiation coming from an additional modulated deexcitation on at least one characteristic line of at least one aforementioned isomer nuclide contained in at least one of the other aforementioned "entangled" samples, the "entangled" "slave" sample, of at least one the aforementioned set of "entangled" samples pertaining to at least one of the other aforementioned "entangled" supports, and in that this additional measured modulated deexcitation, is used to determine the reception of at least one information or to activate at least a command upon the remote control coming from the apparatus of stimulation.

15) (CURRENTLY AMENDED) Device of implementation according to claim 13 characterized in that the aforementioned "entangled" samples of one or more aforementioned sets of "entangled" samples are laid out on at least two aforementioned supports in the aforementioned apparatus of excitation, at least two of these said supports, the "entangled" supports, being thereafter separated for the utilization.

16) (CURRENTLY AMENDED) Device of implementation according to claim 13 characterized in that one uses only one aforementioned support for the aforementioned sets of samples to be entangled together, before their divisions, in the aforementioned apparatus of excitation, the said samples of each set, once "entangled", being the subject of a division on at least two supports, the aforementioned "entangled" supports.

17) (CURRENTLY AMENDED) Device of implementation according to claim 14 characterized in that at least two of the aforementioned "entangled" supports are positioned in relation to each other, for example in synchronous relation, in the aforementioned apparatus or apparatuses of modulated stimulation, and in the aforementioned apparatus or apparatuses of detection, in such way that on at least one

aforesaid "entangled" support, at least one aforementioned "entangled" slave sample is measured by at least one said apparatus of detection, when at least one aforementioned "entangled" "master" sample of the same aforementioned set of "entangled" samples located on one of the other aforementioned "entangled" supports is stimulated in at least one said apparatus of modulated stimulation.

18) (CURRENTLY AMENDED) Device of implementation according to claim 14 characterized in that aforementioned sets of "entangled" samples are arranged according to a defined order allowing the transmission and the reception of complex messages.

19) (*PREVIOUSLY PRESENTED*) Utilization according to claim 7 to remotely transmit information, in particular emergency signals, remote controls, data acquisition, in the mines, sea-beds in particular by means of robots and submarines, in drillings, in the space field in particular at very long distances.

20) (CURRENTLY AMENDED) Product according to claim 1 for medical use in order to irradiate an organ in which at least an aforementioned "entangled" sample is laid out near or in the aforesaid organ, by causing a remote stimulation by means of at least one other aforementioned "entangled" sample.

21) (*PREVIOUSLY PRESENTED*) Device of implementation of the method of use according to claim 7 for usage as a commercial kit of demonstration of whole or part of the method of use covered by the aforesaid claim.